

**Bonneville Power AdministrationPower Administration  
Fish and Wildlife Program FY99 Proposal**

**Section 1. General administrative information**

**Hungry Horse Fisheries Mitigation Plan Flathead Lake**

**Bonneville project number, if an ongoing project** 9101901

**Business name of agency, institution or organization requesting funding**  
Confederated Salish and Kootenai Tribes

**Business acronym (if appropriate)** CSKT

**Proposal contact person or principal investigator:**

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**Subcontractors.**

Organization	Mailing Address	City, ST Zip	Contact Name

**NPPC Program Measure Number(s) which this project addresses.**

10.3

**NMFS Biological Opinion Number(s) which this project addresses.**

Does not apply

**Other planning document references. .**

Hungry Horse Implementation Plan

**Subbasin.**

Upper Columbia

### Short description.

Monitor and implement fisheries improvement activities within the Flathead Lake Basin.

### Section 2. Key words

Mark	Programmatic Categories	Mark	Activities	Mark	Project Types
	Anadromous fish		Construction		Watershed
X	Resident fish		O & M	X	Biodiversity/genetics
	Wildlife		Production	X	Population dynamics
	Oceans/estuaries	X	Research	X	Ecosystems
	Climate	X	Monitoring/eval.		Flow/survival
	Other	X	Resource mgmt		Fish disease
			Planning/admin.		Supplementation
			Enforcement		Wildlife habitat en-
			Acquisitions		hancement/restoration

Other keywords..

### Section 3. Relationships to other Bonneville projects

Project #	Project title/description	Nature of relationship
9608701	Flathead Focus Watershed	Implementation, coordination
9101903	Hungry Horse Mitigation - Habitat	Monitoring, implementation
9101904	Hungry Horse Mitigation - Supplementation	Monitoring, implementation, and coordination

### Section 4. Objectives, tasks and schedules

Obj 1,2,3	Objective	Task a,b,c	Task
1	Determine relative abundance of bull and cutthroat trout.	a	spring gillnetting
2	Determine angler pressure, and catch and harvest rates, on four target species in Flathead Lake.	b	creel survey
3	Improve habitat conditions and biological productivity in direct tributaries to Flathead Lake.	c	comprehensive watershed restoration
4	Monitor kokanee survival	a,b,d,	gillnetting, creel survey, Merwin

		e	trapping, spawning survey
5	Evaluate 6 parameters of lake trout biology	f	fall gillnetting

### ***Objective schedules and costs***

<b>Objective #</b>	<b>Start Date mm/yyyy</b>	<b>End Date mm/yyyy</b>	<b>Cost %</b>
1	04/1999	05/2007	10
2	10/1998	05/1999	55
3	10/1998	09/2007	20
4	10/1998	09/1999	10
5	10/1998	09/2007	5

### **Schedule constraints.**

None foreseen

### **Completion date.**

Indefinite

## **Section 5. Budget**

### ***FY99 budget by line item***

<b>Item</b>	<b>Note</b>	<b>FY99</b>
Personnel		34,000
Fringe benefits		6,000
Supplies, materials, non-expendable property		8,000
Operations & maintenance		2,500
Capital acquisitions or improvements (e.g. land, buildings, major equip.)		0
PIT tags	# of tags:	0
Travel		2,000
Indirect costs		7,500
Subcontracts		5,000
Other		0
<b>TOTAL</b>		<b>65,000</b>

### ***Outyear costs***

<b>Outyear costs</b>	<b>FY2000</b>	<b>FY01</b>	<b>FY02</b>	<b>FY03</b>
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Total budget	65,000	65,000	65,000	70,000
O&M as % of total	5	5	5	5

## Section 6. Abstract

The CSKT and Montana Fish Wildlife and Parks (MFWP) wrote A Fisheries Mitigation Plan for Losses Attributable to the Construction and Operation of Hungry Horse Dam. in March 1991 to define the fisheries losses, mitigation alternatives and recommendations to protect, mitigate and enhance resident fish and aquatic habitat affected by Hungry Horse Dam. On November 12, 1991, the Northwest Power Planning Council (NPPC) approved the mitigation plan with minor modifications, called for a detailed implementation plan, and amended measures 903(h)(1) through (7). A long-term mitigation plan was submitted during August 1992 and was approved by the Council in 1993. This particular project is a continuation of an original contract signed on November 11, 1993. Goals of this project are to create and restore habitat and quantitatively monitor changes in fish populations to verify the efficacy of our mitigation measures. For example, native trout monitoring in Flathead Lake is conducted annually and builds on an existing data set initiated in 1981. Monitoring of the experimental kokanee reintroduction has been a primary activity of this project since 1992. The Polson Golf Course Spring Creek project was completed in 1995 and the first of a planned three years of imprint planting was begun with the placement of 20,000 cutthroat eggs in the stream. Initial planning, distribution of information, scoping of landowners, and inventory of resources were initiated in the Dayton Creek drainage in 1996. Restoration work is projected to continue there for several years. Restoration work began on Skidoo Creek in 1997 and consisted of 1) identifying the problem, 2) recruiting landowner support and participation, and 3) data collection. Work is scheduled for completion in 1998 with monitoring activities projected for several additional years. Lake trout, whose high densities have precluded successful mitigation of losses of other species, have been sampled since 1996 for a determination of maturity and fecundity. Results of this work have utility in determining the population status of this key predator in Flathead Lake.

This program also includes Project No. 9500400 (Libby Mitigation Plan, Section 10.3B1). Public scoping, project site selection and loss/gain assessment for Libby Dam began in 1995 and were completed in 1997. CSKT and MFWP produced a draft document for review in 1997, with a final submitted to NPPC in 1998.

## Section 7. Project description

### a. Technical and/or scientific background.

The problem this project addresses is the loss of habitat, both in quality and quantity, in the interconnected Flathead Lake and River basin resulting from the construction and operation of Hungry Horse Dam. The purpose of the project is to both implement mitigation measures and monitor the biological responses to those measures including those implemented by Project Numbers 9101903 and 9101904. Goals and objectives of the 1994 Fish and Wildlife Program addressed by this project are

the rebuilding to sustainable levels weak, but recoverable, native populations injured by the hydropower system. The project mitigates loss in place and in kind.

The project logically mitigates the blockage of spawning runs by Hungry Horse Dam by restoring and even creating spawning habitats within direct drainages to Flathead Lake. The project also addresses the altered habitat within Flathead Lake resulting from species shifts and consequent dominance of new species that restricts the potential success of mitigation measures.

The project has completed a five year experiment of kokanee reintroduction into Flathead Lake which included the measurement of kokanee growth and survival rates, and lake trout predation rates on kokanee. It has documented downward trends in cutthroat and bull trout as well as changes in several other major species through standardized gillnetting surveys. It defined the baseline condition of the Flathead Lake fishery in 1992-1993 by completing a one year creel survey (Evarts et al. 1994). The project has begun restoration work in three tributaries to Flathead Lake.

**b. Proposal objectives.**

(1) Determine relative abundance of bull and cutthroat trout.

(a) numbers of bull trout and westslope cutthroat trout captured per gillnet set in standardized locations and dates. The project determines trends in abundance that provide a feedback on the contribution of mitigation measures.

(2) Determine angler catch rates, harvest rates, and pressure on four target species in Flathead Lake.

(a) standardized procedures tested in 1992-93 will be duplicated

(3) Improve habitat conditions and biological productivity in direct tributaries to Flathead Lake. Minimum objectives for the accomplishment of watershed restoration have not been identified, but contributions to the goal will be measured with the following parameters:

(a) area of riparian vegetation planted,

(b) miles of fencing installed,

(c) changes in riparian health rating expressed by the Proper Functioning Condition survey method,

(d) linear distance of stream channel reconstructed,

(e) cubic feet per second increase in base stream flows,

(f) survival to emergence of planted cutthroat eggs,

(g) in-migration to tributaries of returning adult cutthroat trout,

(h) reduction in percent of streambed sediments of a size less than 4.75mm in diameter,

(I) reduction in channel width/depth ratio, and,

(j) increase in average stream pool depth.

(4) Monitor kokanee survival and the success of the kokanee experiment

(a) 30% survival of kokanee one year after stocking

(b) yearling to adult survival of 10% or 100,000 kokanee

(c) harvest of 50,000 kokanee > 11", and fishing pressure of 100,000 hours.

The benefits of this monitoring are a heightened understanding of the affected mitigation area and greater ability to translate mitigation efforts into constructive products.

(5) Evaluate 6 parameters of lake trout biology

(a) age at maturity, (b) length at maturity, (c) fecundity

(d) growth, (e) mortality, (f) year class strength

**c. Rationale and significance to Regional Programs.**

This project works to achieve the goals and objectives of the FWP by implementing measures that mitigate the loss of habitat resulting from construction of Hungry Horse Dam. These measures have included direct supplementation and habitat restoration. Additionally, this project monitors tributary restoration projects directly and on a larger scale in Flathead Lake, so that the feedback loop remains intact. Monitoring and implementation are both conducted in close cooperation with Project No. 9101903 which represents a necessary collaboration effort between the State and the Tribes who share jurisdiction and management in the basin. Monitoring of supplementation has been done cooperatively with the Federal Project No. 9101904. This project also proposes to collaborate with the new project proposal: Foodweb interactions in Flathead Lake.

**d. Project history**

This project was initiated in 1992 after NPPC adopted Hungry Horse Mitigation Plan (November 1991, see NPPC program:10.3A.10), and has received annual funding since that time.

Adaptive management is actively being practiced, most notably in the implementation and subsequent completion of the kokanee reintroduction experiment. Additionally adaptive management is practiced in the targeting of lake trout as a species to monitor because lake trout predation bears so heavily on our ability to mitigate for the losses of species identified in the Fish and Wildlife Program.

Major results achieved are:

\*detailed monitoring of a five year kokanee reintroduction experiment that identified and quantified the reason for the failure of the experiment.

\*accurate and repeatable quantification of baseline angler use of the Flathead Lake fishery in 1992-3.

\*continuation of annual trend monitoring of native westslope cutthroat and bull trout to establish a 16 year period of record.

\*creation of a small tributary to Flathead Lake from a marshy drainage area that has successfully raised outmigrating cutthroat trout.

\*initiation of a process that includes all stakeholders in the Dayton Creek watershed to begin restoration work and reestablishment of adfluvial cutthroat populations.

Reports:

Carty, D., W. Fredenberg, L. Knotek, M. Deleray, and B. Hansen. 1997. Hungry Horse Dam fisheries mitigation: Kokanee stocking and monitoring in Flathead Lake -

1996. BPA Contract No. DOE/BP-60559-3, Project No. 91-019-01, 91-019-03, 91-019-04. U.S. Fish and Wildlife Service, Creston, Montana.
- Beauchamp, D.A. 1996. Estimating predation losses under different lake trout population sizes and kokanee stocking scenarios in Flathead Lake. Report prepared for Montana Fish, Wildlife and Parks, Kalispell, Montana.
- Hansen, B., J. Cavigli, M. Deleray, W. Fredenberg, and D. Carty. 1996. Hungry Horse Dam fisheries mitigation: kokanee stocking and monitoring in Flathead Lake - 1995. BPA Contract No. DE-A170-87BP65903, Project No. 91-19, 91-19-01, 91-19-03, 91-19-04. Confederated Salish and Kootenai Tribes, Pablo, Montana.
- Hansen, B. 1996. Summary of Work to Develop Polson Golf Course Spring Creek to Benefit the Flathead Lake Fishery, Report to Hungry Horse Interagency Group, Confederated Salish and Kootenai Tribes, Pablo, Montana.
- Deleray, M. W. Fredenberg, and B. Hansen. 1995. Kokanee stocking and monitoring, Flathead Lake - 1993 and 1994. BPA Contract No. DE-A170-87BP65903, Project No. 91-19-1. Montana Fish, Wildlife and Parks, Kalispell, Montana.
- Evarts, L., B. Hansen, and J. DosSantos. 1994. Flathead Lake angler survey. BPA Contract No. DE-B179-92BP60479, Project No. 91-19-1. Confederated Salish and Kootenai Tribes, Pablo, Montana.
- Fisheries Mitigation Plan for Losses Attributable to the Construction and Operation of Hungry Horse Dam, MFWP and CSKT, 1991.
- Hungry Horse Dam Fisheries Implementation Plan, MFWP and CSKT, 1993.
- Hungry Horse Dam Fisheries Mitigation, Biennial Report, 1992-1993, DOE/BP-60559-2.

#### **e. Methods.**

- 1) Standardized gillnetting that provides catch rates of westslope cutthroat and bull trout  
This work now constitutes a time-series of trends in native species abundance that dates back to 1981.
- 2) Standardized roving creel survey to determine catch and harvest rates of targeted species with aerial counts to estimate pressure. This creel survey will be a duplication of the one conducted in 1991-92 (Evarts et al. 1994) which was reviewed by the Scientific Panel in 1995.
- 3) Methods employed to improve habitat conditions and biological productivity in tributaries of Flathead Lake will be a continuation of those employed since the inception of this program, which include:
  - (a) consensus building among landowners living in targeted drainages
  - (b) restoration of stream channels using the natural channel design method

- (c) use of fencing and rotational grazing to protect riparian areas
  - (d) enhancement of stream flows by improving irrigation efficiency and storage.
  - (e) correction of poorly designed or dilapidated stream crossings
- (4) These and other sampling methods are used to monitor kokanee survival and harvest:
- a) quantification of losses of kokanee attributed to predation, by estimation of lake trout abundance and rate of predation to measure Criterion #1 (30% survival of kokanee 1 year after stocking, Hungry Horse Implementation Plan p. 27),
  - b) hydroacoustic survey with species verification by gillnetting to measure Criterion #1, 30% kokanee survival over first year, and Criterion #2 (yearling to adult survival of 10%, Hungry Horse Implementation Plan, p. 27),
  - c) surveys of returning adult kokanee to measure Criterion #2 (Hungry Horse Implementation Plan, p.27),
  - d) creel surveys to measure Criterion #3 (annual harvest of 50,000 >11" kokanee (Hungry Horse Implementation Plan, p.27).
- 5) Capture of lake trout during spawning season and examination of gonadal development to evaluate six parameters of lake trout biology ( age at maturity, fecundity, year class strength, mortality, and growth).
- f. Facilities and equipment.**  
A 23 foot welded aluminum boat with 250 hp outboard motor, and office space, laboratory, microscopes, computers and vehicles, all of which are adequate to achieve the objectives.
- g. References.**  
See reports listed on page 6.

## **Section 8. Relationships to other projects**

Monitoring and implementation are both conducted in close cooperation with Project No. 9101903 which represents a necessary collaboration effort between the State and the Tribes who share jurisdiction and management in the basin. Monitoring of supplementation has been done cooperatively with the Federal Project No. 9101904. This project also proposes to collaborate with the new project proposal: Foodweb interactions in Flathead Lake.

## **Section 9. Key personnel**

- \*Barry Hansen (0.25 FTE)
- \*Bachelor of Science, Tulane University, New Orleans, Louisiana, 1974
- \*Master of Science, University of Montana, Missoula, Montana, 1988
- \*Certified Fisheries Scientist (American Fisheries Society)
- \*Confederated Salish and Kootenai Tribes



\*Fisheries biologist conducting mitigation, monitoring, research, and review.  
 \*Formerly employed by Montana Fish, Wildlife and Parks and the U.S. Forest Service  
 \*Barry=s expertise for this job results from extensive experience in conducting fisheries research and implementation projects under NPPC direction. Those projects include instream flow studies, reservoir fluctuation studies, and the current supplementation, monitoring and stream restoration projects conducted over the last five years. For each project a completion report was prepared resulting in a total of eight reports submitted to BPA.

Hansen, B., and J. DosSantos. 1997. Distribution and management of bull trout populations on the Flathead Indian Reservation, western Montana, USA. ed. Mackay, W.C. et al. Friends of the Bull Trout Conference Proceedings.  
 Hansen, B. 1990. Changes in the benthic community of Lake Creek, MT, resulting from mine tailings contamination. Pp. 119-127 in: Proceedings of the Clark Fork River Symposium. University of Montana, Missoula, MT.  
 And reports listed above as project accomplishments.

\*Joe DosSantos (0.05 FTE)  
 \*Bachelor of Science, University of Montana, Missoula, Montana, 1978  
 \*Master of Science, Montana State University, Bozeman, Montana, 1985  
 \*Certified Fisheries Scientist (American Fisheries Society)  
 \*Confederated Salish and Kootenai Tribes  
 \*CS and K Tribal Fisheries Program Manager  
 \*Formerly employed by Montana Fish, Wildlife and Parks (1977-1982)  
 \*Joe=s expertise results from his experience working with large hydropower projects since 1978, and his work with inland salmonid biology and management since 1977, and with esocids and centrarchids since 1983.  
 Hansen, B., and J. DosSantos. 1997. Distribution and management of bull trout populations on the Flathead Indian Reservation, western Montana, USA. ed. Mackay, W.C. et al. Friends of the Bull Trout Conference Proceedings.  
 Hardy, T.B. and J.M. DosSantos. 1994. Technical evaluation of impacts in Flathead lake and the lower Flathead River from Kerr Dam operations and recommendations for operational mitigation at Kerr Dam. Draft Report. Utah Water Research Laboratory, Utah State University, Logan and Confederated Salish and Kootenai Tribes, Pablo, Montana. 68 pp.  
 Evarts, L., B. Hansen, and J. DosSantos. 1994. Flathead Lake angler survey. BPA Contract No. DE-B179-92BP60479, Project No. 91-19-1. Confederated Salish and Kootenai Tribes, Pablo, Montana.  
 DosSantos, J., C. Hunter, L. Lochard, B. Marotz and J. Vashro. 1992. Hungry Horse Dam Fisheries Mitigation Implementation Plan. Report to the Northwest Power Planning Council, Montana Department of Fish, Wildlife and Parks, Kalispell, and the Confederated Salish and Kootenai Tribes, Pablo, Montana. 42 pp.

DosSantos, J.M. 1991. Ecology of a riverine pike population. Pages 1555-159 in J.L. Cooper and R.H. Hamre, coordinators. Warmwater Fisheries symposium I. USDA Forest Service, Rocky Mountain Forest and Range Experiment Station, General Technical Report RM-207, Fort Collins, Colorado.

## **Section 10. Information/technology transfer**

Annual reports have been produced by this project in each of the four years of its existence. One interagency workshop and one expert panel have been convened to date and such will continue to be the practice. Results of project monitoring determine agency direction in implementing mitigation for Hungry Horse Dam.